

*Micro-filtration (MF) and Ultra-filtration (UF) systems enable the **selective removal** of microbial cells, cell debris, and macro-molecules, whilst allowing target molecules to pass the membrane.*

The **MMS** have experience in clarification of various feed streams, including yeast, *E.coli*, and fungal fermentation broths.



Microfiltration for clarification of protein

**MMS** work to the highest design and construction standards. Our biopharmaceutical membrane systems are fully documented, designed and constructed to meet FDA standards.

Hollow fibre modules are most often applied due to their resistance to fouling and the ability to back-flush the elements.



Clarified material prior to RO

### Benefits

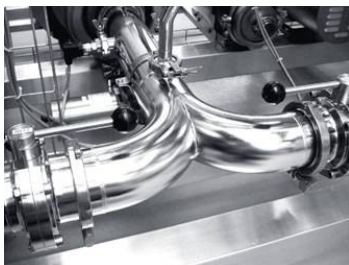
- Physical means of clarification
- No additives, flocculating agents required
- No solvents required
- Low operating temperatures
- Low energy requirements

### Features

- Fully automated systems
- Supported by specialists
- CIP system included
- Complete solutions including tanks, post and pre-treatment

### Options

- Diafiltration for higher product purity
- On-line control of total solids
- On-line pH adjustment
- Remote access for system support and rapid troubleshooting
- Additional polishing step of permeate
- Scalable for more capacity



**MMS** produce a range of MF/UF systems capable of handling feed rates from 10 L/h – 25'000 l/h. The capacity of the system is a function of several parameters, including feed concentration, volumetric concentration and operating temperature. With our specialists we will enable you to select the correct system for your product and processing requirements.



Yeast clarification



Clarification of 5000 L/h

**MMS** enable a process from the conceptual phase to be developed, designed, constructed, installed and implemented by our customers, *successfully*.

*MMS supports customers during the develop of their membrane process. Our infrastructure allows for the screening of numerous membranes and scale-up of processes using out pilot systems.*

#### Other Biopharmaceutical Applications

- Fungal broth clarification
- Yeast broth clarification
- E. coli broth clarification
- Protein/enzyme desalting and concentration
- Small molecule desalting and concentration
- Solvent recovery



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